

REMARKS

In the Official Action, the Examiner raised a series of rejections under the second paragraph of 35 U.S.C. §112 for failing to define the structure of layers, for failing to provide antecedent basis for the term "the film layer" in claims 2 and 12-16, and for being unclear with respect to the term "the film" in claims 12, 13, 15 and 16. The Examiner then raised two prior art rejections under 35 U.S.C. §103(a) based on certain combinations of documents.

Addressing the rejections in the order in which they have been presented, applicants first note that in determining the clarity of the claims, it is not sufficient to read the claims in a vacuum, but instead the claims must always be considered in light of the specification and the prior art. Applying this standard, applicants respectfully maintain that the claims previously of record fully complied with the provisions of §112. Nonetheless, in the interest of advancing the prosecution of the present application, certain of the claims have been amended to define selected components of the adhesive film with greater precision consistent with the teachings of the specification. In particular, claims 1, 6 and 7 refer to an adhesive film which comprises an adhesive layer formed on one surface of a base film with the base film comprising at least one film layer having a gas transmission rate of not more than 49.35 ml/m²·day/MPa. These claims now recite that the film layer having a gas transmission rate of not more than 49.35 ml/m²·day/MPa is an outermost layer of the base film on the side on which the adhesive layer is not formed. This recitation is consistent with the description provided in the specification such as in paragraph [0010] on pages 6-7. Claims 13 and 16 have been similarly amended.

Claims 6 and 7 have been amended to define the based film more specifically and claim 14 has been amended to correctly depend from claim 10 and to clarify the identity of the film layer. It is noted that the metal film layer or a metal oxide film layer recited in claims 14 and 16 is part of the adhesive film and is distinct from the metal film formed on the non-circuit formed surface of the semiconductor wafer. Finally, claims 12 and 15 have been canceled without prejudice or disclaimer.

In view of the amendments to the claims, applicants respectfully submit that all of the rejections under 35 U.S.C. §112 have been fully met.

The claims of record clearly define the various aspects of the invention in a manner which is patentable over the cited prior art. As now recited in claim 1, one aspect of the present invention relates to a method for forming a metal film on a non-circuit-formed surface of a semiconductor wafer. The method comprises the steps of applying an adhesive film to a circuit-formed surface of a semiconductor wafer with the adhesive film comprising an adhesive layer formed on one surface of a base film comprising at least one film layer having a gas transmission rate of not more than $49.35 \text{ ml/m}^2 \cdot \text{day/MPa}$ wherein the film layer having a gas transmission rate of not more than $49.35 \text{ ml/m}^2 \cdot \text{day/MPa}$ is an outermost layer of the base film on the side on which the adhesive layer is not formed. The method further comprises forming a metal film on the non-circuit-formed surface of the semiconductor wafer to which the adhesive film is applied.

As further explained in the specification and in the remarks of the previous response, by using the defined adhesive film, the out-gas for the main surface of the base film can be shielded so that a significant reduction of out-gas occurs. This means that the time for reaching an initial vacuum level can be shortened thereby

enhancing the operational workability and productivity of the method. Furthermore, it is possible to prevent the formation of a metal film in a state where the vacuum level has not been reached due to the generated out-gas thereby making it possible to avoid unacceptable formation of the metal film caused by the generation of out-gas during the formation of the metal film.

The cited prior art relied does not disclose or suggest the presently claimed aspects of the invention and clearly does not recognize the advantages which may be obtained there from. Grupen-Shemansky, U.S. Patent No. 5,268,065, relates to a method for thinning a semiconductor wafer which includes a support film shown in Figure 1. As discussed in the paragraph beginning at column 3, line 4, the tape or support film comprises a polyester layer having thickness of approximately 127 microns, a contact layer comprising a resilient silicone rubber having a thickness of approximately 153 microns and an **interlayer therebetween** comprising aluminum having a thickness of less than approximately 0.01 micron. This passage of the patent states that the aluminum interlayer provides additional stiffness, uniform temperature distribution, electrostatic discharge protection and promotes adhesion between the polyester layer and the silicone rubber layer.

The claims of record in the present application specify that the film layer having the defined gas transmission rate is the outermost layer of the base film on the side on which the adhesive layer is not formed. It is not an interlayer between two other layers as specifically required in Grupen-Shemansky. Indeed, by explicitly describing the aluminum interlayer as being located between the polyester layer and the silicone rubber layer, Grupen-Shemansky would actually lead away from the claims in the present application which recite, *inter alia*, the film layer with the

defined gas transmission rate as the outermost layer. In this respect, the disclosed aluminum layer of the patent would not function to "promote adhesion between the polyester layer and the silicone rubber layer" (column 3, lines 29-33) if the aluminum layer was not located between these layers. Thus, the patent in no way teaches the specifically defined structure and also does not recognize the noted advantages which can be obtained in accordance with the present invention.

The additional reliance on Matsuhiro et al., U.S. Patent No. 6,010,919, to show the impermeability of aluminum does not remedy the deficiencies of Grupen-Shemansky. Furthermore, the teachings of Matsuhiro et al. also would not lead to a recognition of the advantages which can be obtained from the invention. Thus, the claims of record are clearly patentable over this combination of patents.

The still further reliance on Saimoto et al., U.S. Patent Application Publication No. 2002/0106868, for the teaching of an adhesive portion having an elastic modulus of at least 0.1 MPa also would also not remedy the substantial distinctions set forth above and therefore the claims of record are also patentable even if the teachings of Saimoto et al. where combined with those of the previously discussed patents.

For all of the reasons set forth above, applicants respectfully submit that all issues raised in the Official action have been fully met and therefore applicants request reconsideration and allowance of the present application.

As a final matter, applicants note that an Information Disclosure Statement was filed on April 26, 2010, and applicants respectfully request that the Examiner considered the information provided therein and returned the acknowledged citation form to the undersigned attorney with the next Official Action.

Should the Examiner have any questions concerning the subject application, the Examiner is invited to contact the undersigned attorney at the number provided below.

The Director is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17 and 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

By: /Robert G. Mukai/

Robert G. Mukai
Registration No. 28531

Customer No. 21839
703 836 6620

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